ATLAS EXPERIMENT	CERN	ATLAS AGREEMENT 582/2017

ATLAS AGREEMENT No. 582 / 17

Financing of the ITk ATLAS17LS sensors for MS-4086/EP and Module R&D

BETWEEN

The **ATLAS Collaboration**
Represented by the ATLAS Resources Coordinator

on the one hand,

AND

The Institutes of the ATLAS ITK Strip sensor and Module R&D efforts represented by those responsible for their funding

on the other hand

CONSIDERING THAT:

- LHCC has approved the ATLAS ITk Strip Detector TDR (CERN-LHCC-2017-005);
- CERN has lead a Market Survey to find Planar Silicon Sensor vendors for the ATLAS and CMS Outer Tracker Upgrades (MS-4086/EP);
- ATLAS has an on-going strip module prototyping program;
- There is a need to pull resources to fund electrical sensor mask and fabrication costs, as well as mechanical sensor fabrication costs.

IT IS AGREED AS FOLLOWS:

ARTICLE 1 SCOPE OF THE AGREEMENT

1.1 The purpose of this document is to agree on the funding of orders for ATLAS17LS sensors in the context of MS-4086/EP and ITk-strip Module R&D.

ARTICLE 2 PARTIES TO THIS AGREEMENT

2.1 The Parties of this Agreement are the following ATLAS Institutes participating in the ATLAS ITk-strip sensor and Module R&D efforts:

- LBNL, Berkley, USA
- Carleton University, Canada
- Humboldt University, Berlin, Germany
- DESY, Hamburg, Germany
- Freiburg University, Germany
- Cambridge, United Kingdom
- IHEP, Beijing, China

ARTICLE 3 OBLIGATIONS OF THE PARTIES

3.1 The Parties agree to provide the funds for electrical sensor purchase, with contributions listed ANNEX 1, as well as the funds for mechanical sensor purchase, with contributions in ANNEX 2.

ARTICLE 4 DURATION OF THE AGREEMENT

4.1 This Agreement is valid until all orders within the scope of this agreement are fully completed and paid, as well as the final cost sharing and all contributions are agreed and accounted for.

4.2 In the event that the project evolves differently from the plans described here, this Agreement shall be amended through Addenda describing the revised arrangements.

ARTICLE 5 CO-ORDINATION AND ADDRESSES FOR CORRESPONDENCE

5.1 All documents concerning this agreement shall bear the reference:

"ATLAS Agreement No. 582/17

5.2 The performance of this agreement shall be co-ordinated by the following persons:

for the ATLAS Collaboration:

ATLAS Resources Co-ordinator, CERN - Division PH, CH-1211 Geneva 23, SWITZERLAND (attn. F. Dittus)

for the related ITk institutes:

ATLAS ITk Project Leader, presently represented by V. Fadeyev (SCIPP, U. California), for electrical sensor purchase, and

ATLAS ITk Project Leader, presently represented by Craig Sawyer (STFC, Rutherford Appleton Laboratory, UK) for mechanical sensor purchase

ARTICLE 6 ARBITRATION

6.1 Any differences arising during the execution of this agreement will be submitted to the ATLAS Spokesperson who will propose solutions in the best interest of the Collaboration.

Signed in Geneva,

(V. Fadeyev)

Project Leader
ATLAS ITk ATLAS17LS electrical order

(F. Dittus)

Resources Co-ordinator
ATLAS Collaboration

(C. Sawyer)

Project Leader
ATLAS ITk ATLAS17LS mechanical order

(A. Affolder)

Project Leader
ATLAS ITk Strips

(Z. Dolezal)

Resources Co-ordinator
ATLAS ITk Strips

Participating institutes, represented by:

(3)
Carl H. Haber
LBNL, US

Thomas Koffas
Carleton University,
Canada

(1)
Heiko Lacker
Humboldt University,
Berlin, Germany

Bart Hommels
Cambridge, UK

(2)
Hongbo Zhu
IHEP, Beijing, China

Ulrich Parzefall
Freiburg University,
Germany

Ingrid Gregor
DESY,
Hamburg, Germany

ANNEX 1 SHARING OF THE ORDER COSTS FOR ATLAS17LS *ELECTRICAL* SENSORS

Orders for strip sensors in the context of MS-4086/EP and for Module R&D are being placed in two steps:

- Round 1 took place in September-October 2017, with two orders being placed with Hamamatsu Photonics (HPK). The orders were negotiated with HPK, and the fabrication costs reflect the discounts obtained for the total volume of sensors from both orders:
  - one order from CERN, which covers the HPK mask set cost and fabrication cost of 50 sensors (40 of standard thickness, and 10 thin ones)
  - one order from China directly to HPK, which covers fabrication cost for additional sensors plus appropriate taxes.
- Round 2 took place in January 2018 with Infineon Technologies (IFX). This order covers the IFX mask set cost and fabrication cost of 40 sensors.

The funds from the institutes participating in the CERN order will be collected by the ATLAS Resources Coordination Office. The amounts in CHF are approximate, depending on the exchange rates at the time of the transfers. The exact amounts will be documented once all the money is collected.

Country	Representative	Order path	Funds	Currency	[CHF] (approx.)
UK	Bart Hommels	CERN	95'087	GBP	126'050
USA	Carl Haber	CERN	95'801	USD	92'114
Germany (Humboldt, BMBF)	Heiko Lacker	CERN	10'000	Euro	11'796
Germany (Freiburg, BMBF)	Ulrich Parzefall	CERN	40'000	Euro	47'182
Germany (DESY)	Ingrid Gregor	CERN	20'000	Euro	23'591
Canada	Thomas Koffas	CERN	5'000	CAD	3'864
China	Hongbo Zhu	China	254'000	RMB	37'649

Table 1. Contributions toward ATLAS17LS Electrical sensor procurement from participating ATLAS Institutions

Split of sensors among participating ATLAS Institutions

The split of the delivered sensors between participating institutions will be decided on the basis of financial contributions to the different orders. The total cost of all orders from both rounds will be summed to find the average cost per sensor. The participating institutions will obtain the number of sensors in proportion to their financial contribution, according to the average cost per sensor, if the sensor delivery is desired.

Note: the total amounts shown in this table are calculated according to estimations based on the contribution specified by each institution. The final value will depend on the final HPL quotation and will be defined according to the percentages shown in the tables

ANNEX 2 SHARING OF THE ORDER COSTS FOR ATLAS17LS *MECHANICAL* SENSORS

Order for mechanical strip sensors in the context of Module R&D is being placed with Hamamatsu Photonics. This is the same vendor which is producing the electrical strip sensors in the same geometry.

Country	Representative	Funds	Currency	[CHF] (approx.)
UK	Bart Hommels	810,000	YEN	7132
USA	Carl Haber	405,000	YEN	3566
China	Hongbo Zhu	810,000	YEN	7132

Table 2. Contributions toward ATLAS17LS Mechanical sensor procurement from participating ATLAS Institutions

Note: the total amounts shown in this table are calculated according to estimations based on the contribution specified by each institution. The final value will depend on the final HPL quotation and will be defined according to the percentages shown in the tables

Carl H. Haber
LBNL, US

Thomas Koffas
Carleton University, Canada

Heiko Lacker
Humboldt University, Berlin, Germany

Ulrich Parzefall
Freiburg University, Germany

Bart Hommels
Cambridge, UK

Hongbo Zhu
IHEP, Beijing, China

Ingrid Gregor
DESY, Hamburg, Germany

Signed in Geneva,

(V. Fadeyev)

Project Leader
ATLAS ITk ATLAS17LS electrical order

(F. Dittus)

Resources Co-ordinator
ATLAS Collaboration

(C. Sawyer)

Project Leader
ATLAS ITk ATLAS17LS mechanical order

(A. Affolder)

Project Leader
ATLAS ITk Strips

(Z. Dolezal)

Resources Co-ordinator
ATLAS ITk Strips

Participating institutes, represented by:

Carl H. Haber
LBNL, US

Thomas Koffas
Carleton University, Canada

Heiko Lacker
Humboldt University, Berlin, Germany

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Cambridge, UK

Hongbo Zhu
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Freiburg University, Germany

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DESY,
Hamburg, Germany

(3)

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× (3)

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